

**CALIFORNIA DEPARTMENT OF TRANSPORTATION
POSITION DUTY STATEMENT**

CLASSIFICATION TITLE Transportation Engineer, Electrical	OFFICE/BRANCH/SECTION Central Region Construction 501, District #931	
WORKING TITLE Inspector, Electrical	POSITION NUMBER 931-501-3609 __ __ __	EFFECTIVE DATE _____

As a valued member of the Caltrans team, you make it possible for the Department to provide a safe, sustainable integrated, and efficient transportation system to enhance California's economy and livability. Caltrans is a performance driven, transparent, and accountable organization that values its people, resources and partners, and meets new challenges through leadership, innovation and teamwork.

GENERAL STATEMENT:

Under the direction of the Senior Transportation Engineer (Electrical), incumbent is in charge of construction contract electrical installations in the Central Region. Incumbent is responsible for documenting projects, field investigations and inspections, and other related work. Incumbent performs various technical office task and field tasks of high difficulty relating to transportation construction and engineering work.

TYPICAL DUTIES:

Percentage
E=Essential
M=Marginal

50%(E) Prepares professional electrical, electronic and computer layouts and detailed drawings; calculates and prepares cost estimates on Electrical and Electronic work such as Highway Lighting, Traffic Signals, ITS Systems, Communication systems, Pumps and Bridge and Tunnel systems. Checks shop drawings and construction submittals for Electrical and electronic work related to Transportation Engineering. Performs inspection of Contractors work and advises Resident Engineers of contract compliance/noncompliance of various phases of electrical construction activity on their projects. Continually monitor and document contractor's work and progress at the construction site. Prepares daily reports of the work includes documenting conversations and other items that affect the work. Measures and tests the completed work at construction site and developing a punch list.

20%(E) Advises contractor's personnel on various phases of construction activity. Prepares drafts and specifications, Contract Change Orders, Contract estimates, and other documents and reports involved in the Construction of transportation projects. Prepares cost estimates and agreements. Documents on a daily report instructions given to contractor.

15%(E) Performs constructability and other reviews of contract plans and specifications involving electrical work either in written form or by use of computer at construction office or construction site.

5%(E) Inspects and reviews civil engineering items during and after construction.

5%(E) Trains construction inspectors in electrical inspection work.

5%(E) Prepares the electrical portion of “as built” plans.

SUPERVISION EXERCISED OVER OTHERS

None. However, the incumbent may be called upon to act in absence of the supervisor for a short duration. May act as a lead engineer for other inspectors and for functional guidance in training and assisting less experienced staff.

KNOWLEDGE, ABILITIES, AND ANALYTICAL REQUIREMENTS

Incumbent must have thorough knowledge of: electrical and electronic theory as applied to the design and construction of Projects involving highway lighting and traffic control systems; modern lighting and traffic control equipment; mathematics related to electrical engineering; standard practices, techniques and methods used in electrical, electronics and computer engineering; direct and alternating current circuits; methods, materials, tools and equipment used in electrical, electronic and computer work; various codes; basic occupational safety and health regulations governing the design and installation of electrical and electronic equipment, including the National Electric Code and Title 8 Industrial Relations, Electrical Safety Orders of the Division of Occupation Safety and Health.

Incumbent must have ability to inspect installation and operation of highway lighting and traffic control systems. Must be able to read highway plans and specifications related to electrical work.

Electrical Engineering Registration is desired.

While general guidelines are provided by the Standard Specifications and plans, each project will have unique problems where good engineering judgment and analysis is required to make necessary changes at a minimum of cost while maintaining the integrity of the facility as designed.

Must have a complete knowledge of contract administration paperwork and documentation. Must be able to communicate effectively in both verbal and written form. Must be able to use and understand computers. Incumbent must have the ability to direct the work of others and maintain cooperative relations with those contacted in the work. Must have knowledge of the Construction Manual, Standard Specifications, and Special Provisions. Must be able to prepare reports and correspondence.

Incumbent is required to have a moderate degree of analytical skill to determine if construction work meets specification requirements and to interpret plans and specifications correctly.

Incumbent should have knowledge of methods, materials, tools and equipment used in highway construction; scheduling; and safety practices. Incumbent is required to know methods of proportioning and handling Portland cement and asphalt concrete; testing of materials; principles and practices involved in utility relocation, environmentally sensitive areas, Storm Water Pollution Prevention Plans (SWPPP) and Cal/OSHA safety regulations. Incumbent must be able to calculate pay quantities on Contractor's contracts and communicate effectively orally and in writing. Personal computer (PC) skills are required. Must have the ability to make neat and accurate mathematical calculations and engineering notes; make sound

decisions in the implementation of contract plans, specifications and various engineering activities; demonstrate the potential to assume progressive technician journey level responsibility; organize/arrange data to produce effective work products without repetitious direction; and possess interpersonal skills necessary to be an effective team member.

Knowledge of: Basic principles of physics, chemistry, and mathematics as applied to engineering; properties and uses of engineering materials; methods and equipment of engineering construction; engineering economics.

Ability to: read and write English at a level required for successful job performance; inspect construction work and enforce compliance with plans and specifications; analyze situations accurately and take effective action; prepare reports.

Must have the ability to evaluate work methods and traffic conditions closely, both before and during the work, to assure safety.

Incumbent is expected to perform electrical work of above average difficulty with considerable independence.

CONSEQUENCE OF ERROR

Poor or incorrect engineering decisions could jeopardize the safety of Contractor and State personnel during the installations and maintenance of the electrical system. Poor installation will cause continual maintenance problems where installed facilities will require repairing or revising at considerable time and expense

Failure to understand and failure to incorporate appropriate standards, requirements and policies into work product may result in expensive waste of time and materials, cause additional work and project delays, and could result in excessive construction contract claims. An error in decision, judgment, or the processing of estimates or other contract administration paperwork would result in errors in payment to contractors and/or providers of service under contract with the Department. Poor engineering decisions made by incumbent could cause reduction of productivity

Incumbent is responsible for his/her actions, decisions, quality of work, and proper use of State time, equipment and materials. Improper performance of duties and/or failure to adhere to established policies, procedures and guidelines could lead to adverse action and possible termination.

PUBLIC AND INTERNAL CONTACTS

Incumbent must be able to communicate effectively with others including Department staff, technical/professional level staff of outside agencies, contractor's personnel and members of the public regarding construction projects. Has frequent contact with private contractors, Resident Engineers and their staff, and other branches, both District and Headquarters, to provide a coordination of effort in processing estimates, payments and other documents that are handled by the Construction Field Office. Incumbent must be able to communicate effectively with Contractor's personnel, property owners and internal personnel. Good communicative skills are essential in carrying out the duties.

WORK ENVIRONMENT

Job will have exposure to chemicals, lab conditions, equipment, machinery, heat, cold, dust, gas, fumes, outdoor conditions, indoor conditions, humidity, and high decibels of noise. Hard hat and safety vest or approved safety shirt must be worn at all times in the field, no

exceptions. While at the Construction office employees will normally work in a climate-controlled office under artificial light. However due to periodic problems with the heating and air conditioning, the building temperature may fluctuate. Workload may subject employee to night work, frequent changes of shift, frequent changes of work hours and workdays, and geographic transfer. Travel is required. Vacations may be restricted during peak times. Overtime may be required.

PHYSICAL, MENTAL AND EMOTIONAL REQUIREMENTS

Must possess the ability to work on uneven ground, climb, lift, carry, bend, squat, kneel, crouch, reach, pull, push, grasp, sit, stoop, crawl, and repetitive use of extremities. Must be able to transport variety of objects that are less or equal to 40 pounds. Hard hat and safety vest or approved safety shirt must be worn at all times in the field, no exceptions. May be required to sit for long periods of time. May be required to stand for long periods of time.

The workload is subject to frequent, substantial, and unexpected changes. Workload may subject employee to frequent changes of shift, frequent changes of work hours and workdays, and geographic transfer. Travel is required. Valid California driver's license is required. Night-work, overtime and/or flexible hours may be required. Must be able to organize and prioritize. Must be able to concentrate, formulate effective strategies, be multi-tasked, adapt to changes in priorities, and complete complex task or projects with short notice. Ability to resolve emotionally charged issues reasonably and diplomatically. Must be able to develop and maintain cooperative working relationships. Vacations may be restricted during peak times. Use of computers and other various office equipment is required. Incumbent's assignments will be based on workload needs and could take place anywhere within Central Region.

I have read and understand the duties listed above and can perform them with/without reasonable accommodation. (If you believe you may require reasonable accommodation, please discuss this with the hiring supervisor. If you are unsure whether you require reasonable accommodation, inform the hiring supervisor who will discuss your concerns with the Reasonable Accommodation Coordinator.)

I have also read and understand the Deputy Directive titled "Information Technology Use Standards".

My supervisor has reviewed the policy and procedure I must follow when I am not able to report to work. I understand the policy and procedure.

EMPLOYEE	(PRINT)	DATE
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EMPLOYEE	(SIGNATURE)	DATE
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I have discussed with and provided a copy of this duty statement to the employee named above.

SUPERVISOR	(PRINT)	DATE
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SUPERVISOR	(SIGNATURE)	DATE
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